
**AIRS Project
AIRS Data Processing System**

**AIRS TLSCF DATA SYSTEM
OPERATIONS READINESS**

**Pre-launch Testing and Operations
Preparations**

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Agenda



- TLSCF Data System (TDS) Operational Loading Test
 - Testing Goals
 - Scenarios
- TDS Operations Rehearsals
 - Daily Processing
 - Daily Status Meetings
 - Process Charts
- TDS Operational Test Results
- TDS Launch Readiness
- Conclusions



TDS Operational Loading Test Goals



- Verify that TDS can provide sustained data processing capability
 - Verify data flow
 - Verify data itself (inputs / outputs)
 - Verify processing stream and job control
 - Verify archive storage and retrieval (cache and disk)
- Characterize TDS throughput capability to these goals:
 - 1X – Standard daily data processing PGEs
 - 2X – Add reprocessing or Golden Day processing
 - 3X – Simultaneous standard, reprocessing and Golden Day
- Verify that TDS can support processing with multiple configurations



Operational Loading Test Scenarios



- Daily Processing –exercise process planned to meet daily processing needs
 - Use simulated model, attitude and ephemeris (simulated ingest)
 - Receive NOAA ancillary from GSFC DAAC (prepgc, prepqch)
 - Operator submits and monitors jobs; facilitates job flow
- Reprocessing Tests – add reprocessing older data to processing stream
 - Reprocess data from archive
 - Develop procedures to ensure load balancing and job execution to
 - Ensure daily processing is completed without schedule lapse
 - Reprocess data as quickly as possible
- Golden Day – process, reprocess Golden Day data
 - Process special Golden Day data set
 - Deliver to GSFC DAAC
- Archive Tests
 - Evaluate performance of archive for disk cache and tape file access
 - On-site and off-site exercises



Daily Processing – What is it?



AIRS TDS Standard Daily Processing consists of the following PGE:

	PGE	Number	Cumulative
L1A	AIRS	12	36
	AMSU	12	
	HSB	12	
L1B	AIRS	12	48
	AMSU	12	
	HSB	12	
	VIS	12	
L1B Browse	AIRS	1	3
	AMSU	1	
	HSB	1	
Veg Map	Daily	1	2
	Monthly	1	
L1B Match Up	RaObs	4	12
	FixedLoc	4	
	Synoptic	4	
L2 on Match Up Data	RaObs	4	12
	FixedLoc	4	
	Synoptic	4	

- Daily Processing consists of 113 PGEs

- Surface Marine PGEs are run once per week
 - 7 L1A
 - 7 L1B



Daily Processing Meetings



Daily meetings are conducted to assess progress and chart our next day's processing goals

- Review processing status for previous 24 hours
 - File ingest report – *are we getting our inputs?*
 - Process flow – *are jobs being completed?*
 - Daily Browse and Veg Map – *do data products appear correct?*
 - Determine processing plans for next 24 hours
 - *are we going to perform any special processing activities?*
- Facility Status
- Science Status
 - Validation
 - QA
- Issues
 - Identify issues – schedule special meetings as needed (splinter groups)
 - CCB issues – refer issues to CCB as needed



Processing – Summary Statistics



--- TDS Processing Status Report ---

Tue Apr 30 14:15:03 PDT 2002

	Level 1A Jobs			Level 1B Jobs				Level-2 Jobs	Daily & Other Jobs				
TYPE	AIRS	AMSU	HSB	AIRS	AMSU	HSB	VIS		Browse	Vegmap	Matchup	L2Match	Total
Cumulative Input Jobs													
Submitted	12	12	12	24	12	12	12	0	4	2	27	27	156
Carried Over	6	6	6	16	6	6	6	0	4	2	12	14	84
Currently Processing Jobs													
Loading	0	0	0	0	0	0	0	0	0	0	0	0	0
Pending	12	12	12	19	18	18	18	0	8	4	33	39	193
Waiting	6	6	6	13	0	0	0	0	0	0	1	0	32
Executing	0	0	0	8	0	0	0	0	0	0	4	0	12
Archive Wait	0	0	0	0	0	0	0	0	0	0	0	0	0
Archiving	0	0	0	0	0	0	0	0	0	0	0	0	0
Cumulative Output Jobs													
Timed Out	0	0	0	0	0	0	0	0	0	0	0	0	0
Deleted	0	0	0	0	0	0	0	0	0	0	0	0	0
Failed	0	0	0	0	0	0	0	0	0	0	0	1	1
Completed	0	0	0	0	0	0	0	0	0	0	1	1	2

- The TDS Processing Report

- Updated real-time

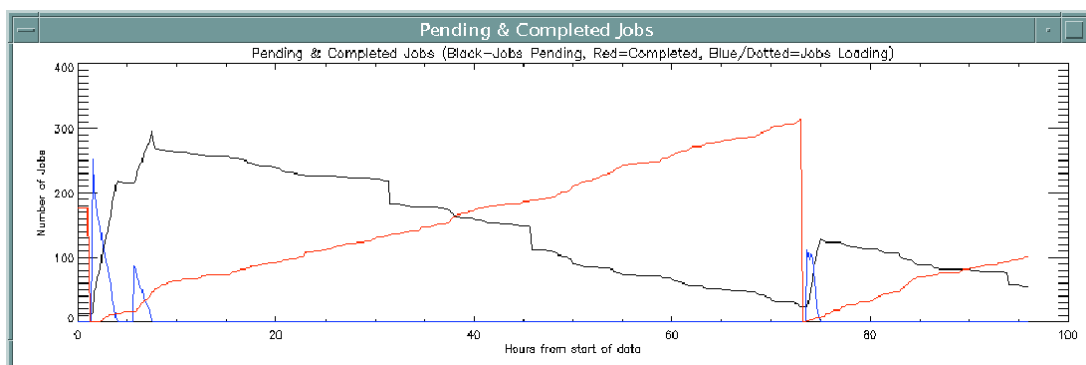
- Available on AIRSTeam website.



Processing – Detailed Statistics

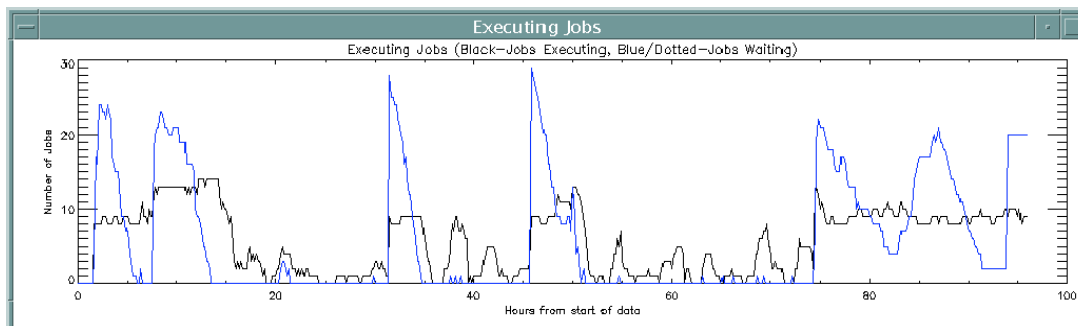


Job Entry Date – 2002-04-26 – (Time is in Hours)			
– Processing –	– CPU Clock Time –	– Wall Clock Time –	– Jobs Run –
Level 1A			
AIRS	26.10	55.01	36
AMSU	4.03	10.10	36
HSB	24.61	33.74	36
<i>Total Hours</i>	54.74	98.85	108
Level 1B			
AIRS	11.17	63.96	36
AMSU	1.77	14.51	36
HSB	0.98	14.06	36
VIS	4.83	24.67	36
<i>Total Hours</i>	18.75	117.19	144
Level 2			
Browse			
AIRS	0.06	0.19	3
AMSU	0.11	0.22	3
HSB	0.16	0.30	3
<i>Total Hours</i>	0.34	0.72	9
VegMap			
VegMap_1D	1.88	2.77	3
VegMap_MD	0.76	1.32	3
<i>Total Hours</i>	2.63	4.10	6
Matchups			
RaObs	5.43	15.99	12
FixedLoc	4.68	7.26	12
Synoptic	12.23	33.71	12
<i>Total Hours</i>	22.34	56.96	36
L2 from Matchups			
RaObs	8.35	12.65	12
FixedLoc	1.75	2.50	12
Synoptic	13.60	19.95	12
<i>Total Hours</i>	23.70	35.10	36

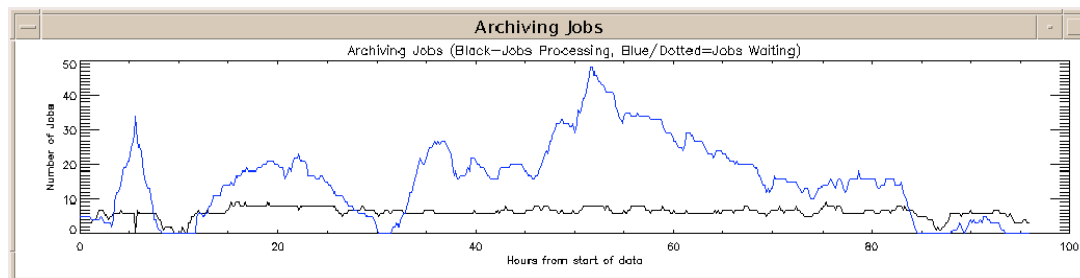


- Job status graphs help to understand TDS performance and identify bottlenecks
- Jobs Pending / Completed

- Jobs Awaiting Execution and Jobs Executing



- Jobs Awaiting Archive and Jobs Archiving





Processing – TDS Operator Log



- An Operator Log is produced and stored on the AIRSTeam website.
- Production information is updated daily

Date Submitted: 4/29/02
Last Modified: 4/30/02

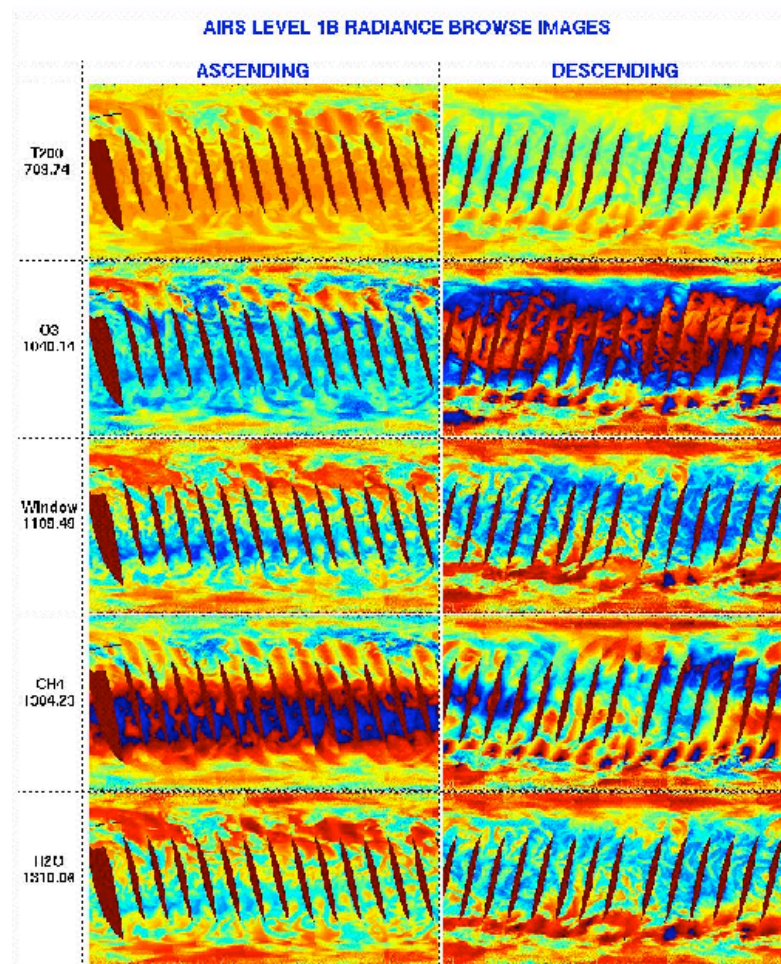
PGB Type	PGB Version	Collection	Start Year	Start Day	Start Gran	End Year	End Day	End Gran	Variants	Completed	Failed	Timed Out	Deleted
L1A_AIRS	2.2.3.38	tlscf	2002	118	120		119	119		till Day118/G239			
L1A_AMSU	2.2.3.38	tlscf	2002	118	120		119	119		till Day118/G239			
L1A_HSB	2.2.3.38	tlscf	2002	118	120		119	119		till Day118/G239			
L1B_AIRS	2.2.3.38	tlscf	2002	118	119		119	118		till Day118/G198			
L1B_AMSU	2.2.3.38	tlscf	2002	118	119		119	118		till Day118/G238			
L1B_HSB	2.2.3.38	tlscf	2002	118	119		119	118		till Day118/G218			
L1B_VIS	2.2.3.38	tlscf	2002	118	119		119	118		till Day118/G238			
L2													
Browse_AIRS	2.2.3.38	tlscf	2002	118	1		118	1					
Browse_AMSU	2.2.3.38	tlscf	2002	118	1		118	1					
Browse_HSB	2.2.3.38	tlscf	2002	118	1		118	1					
Browse_L2													
Browse_L2_OC													
VegMap_Daily	2.2.3.38	tlscf	2002	118	1		118	1					
VegMap_Multi	2.2.3.38	tlscf	2002	118	1		118	1					
Match_Dynamic	2.2.3.38	tlscf	2002		1			1	surf				
L2_Dynamic	2.2.3.38	tlscf	2002		1			1	surf				
Match_FixedLoc	2.2.3.38	tlscf	2002	118	1		118	1	acar/acft/fixed/yo				
L2_FixedLoc	2.2.3.38	tlscf	2002	118	1		118	1	acar/acft/fixed/yo				
Match_RaObs	2.2.3.38	tlscf	2002	118	1		118	4	n/a	till Q2			
L2_RaObs	2.2.3.38	tlscf	2002	118	1		118	4	n/a	till Q2			
Match_Synoptic	2.2.3.38	tlscf	2002	118	1		118	4	glob	till Q3			
L2_Synoptic	2.2.3.38	tlscf	2002	118	1		118	4	glob	till Q2			



Processing – Daily Browse Review



- Daily Browse Products are reviewed to evaluate
 - Continuity
 - Quality





Operational Loading Test Results



The AIRS TDS can support daily processing needs

- Sustained processing 1x throughout basic test period
- Demonstrated that sufficient margin exists to perform reprocessing and/or Golden Day data processing
 - Processing capability is approximately 1.7x – 2.0x

The AIRS TDS has been tuned to meet our processing and data archive access needs

- Added new Sun Blade processor
- Introduced more gigabit data lines
- 2 Terabyte disk cache provides 7 – 12 days instant access
- Additional memory added to some machines



Operational Loading Test Results, cont'd.



**Archive access tests revealed no major surprises:
Disk cache access is quick. Tape access is slower.**

- Disk cache access near-instantaneous access
- Tape archive access takes an average of 5 minutes per file
 - Fastest access times are 2 minutes
 - Slowest access times were on the order of 10 minutes
 - Average access time was about 5 minutes per file overall
 - Access times will vary depending on processing load and user demand
- Reminders
 - Approximately 7 days of current data will be on cache
 - Golden Day baseline data will always be on cache
 - Large archive pulls of *older* data should be coordinated with JPL staff to prevent system blockages



Launch Readiness Status



Launch Readiness

- All Science Processing Software is complete to launch-ready specifications
 - TDS using Version 2.2.3.x SPS, Version 2.2.2 TDS
 - GSFC DAAC using Version 2.1.6.x SPS
Will receive Version 2.2.3.10 for test early in May
- MOSS 7 tests completed with no major problems
- TDS Operational Tests have been successfully completed
- Daily processing meetings have been started
 - JPL status meeting – we may open listen-in telecon feed if desired
 - JPL – GSFC DAAC status meeting
- CCB actively controlling configuration and builds to a positive effect
 - Version 2.2.3 is stable, only minor anomalies identified
 - Version 2.2.4 planned for post-launch builds by mid-May



Conclusions



The TDS is ready for post-launch operations

- JPL – GSFC DAAC interfaces are working
- PGEs are all functioning to launch-ready specifications
- TDS operations scenario is well rehearsed
- TDS has been tuned to yield best possible productivity

Daily processing activity is well managed. Status is available on AIRSTeam website.

- System state
- Near-real-time processing state reports and daily operator logs
- Performance charts (soon)
- Browse images (soon)